

ROAD & REC

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Cover Photo by Bill Pearson, President of Skydive New Mexico

CMSGT JEWELL HICKS
HQ AFSC/SEGO

Nearly all of us who have been around the Air Force for a while are well aware of the "101 Critical Days of Summer" campaign that runs from Memorial Day to Labor Day. We know that this time of the year is the riskiest and most dangerous for Air Force people. In fact, more people are hurt or killed during this period than at any other time of the year.

The Air Force had a comparatively good year during 1997. A tremendous amount of time and energy was spent looking at mishap trends and developing recommendations to protect our people. Using what we've learned and adding Operational Risk Management—a useful tool for identifying and controlling on- and off-duty risks—can see us safely through this year's 101 Critical Days of Summer.

During my more than 19 years in safety, what has made the biggest difference is when people at all levels actively educate each other about the dangers they face daily. The most interesting fact is that these dangers—and the people most often involved—haven't changed during the past decade.

Off-duty mishaps, particularly automobile accidents, continue to take a toll on Air Force people. Each year, normally bright, hard-working airmen seem to forget how dangerous it is to drink and drive, fail to buckle their seat belts, drive at excessive speeds, or drive when fatigued.

I don't like singling people out by groups, but young, single, enlisted men were involved in more than 90 percent of the fatal mishaps that occurred during the past 10 years. During this time, the Air Force lost an average of 35 people each 101 Critical Days period. That's 350 people who could be living and enjoying their lives, growing as individuals, and working as productive members of the Air Force.

You don't hear much about Class A permanent-total or Class B permanent-partial disabilities, but they've also taken their toll during the 101



Critical Days. Since 1988, our people have suffered more than 400 of these mishaps, costing the Air Force more than \$40 million.

Apart from the loss of life during this time, we've also had more than 15,000 Class C mishaps that have resulted in minor injuries. We need to recognize that these mishaps are indicators of "what might have been"—that many could just as easily have been Class As.

Numbers might not mean much to some of you, but keep in mind those figures were only for the 101 Critical Days. Taken together, they cost the Air Force 15,000 workdays and \$91 million. That \$91 million represents only the "direct costs"—not indirect costs, such as loss of productivity and mission impact. If we included those costs, the figure could easily triple. Whether you're looking at mishap numbers or bottom line costs, it's obvious we'll all benefit by preventing fatalities and injuries in the Air Force.

It's equally obvious we're not reaching all of our people with the safety message. There are some individuals who just won't listen. They're the "invincible ones" who, like the 350 who've died during the past 10 summers, may find out that not controlling risks can often have deadly consequences. This is the group we are most concerned about and need to reach. These people need to hear from friends, family, supervisors, and coworkers how vital it is to use good judgment, maturity, and common sense at work and at play. Supervisors and commanders can play an especially valuable role in reversing these negative trends. Because they work with their people closely each day, they can encourage their workers to be safe both on- and off-duty.

Every summer our people face great challenges, and this season won't be any different. We know what the dangers are. We also know who is at greatest risk. Now it's up to each of us to plan to work and play safely. Let's take care of each other and make this the best 101 Critical Days of Summer yet! ■



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ORM... Operational Risk Management

Exposing the Myths

COL ROBERT W. SCOTT
HQ AFSC/SEG

WAIT! Come back here and stand in line. I know, it's a pretty long one when all of the military and civilian personnel in the Air Force line up. I need just two volunteers to step forward who don't mind dying unexpectedly. What? No one wants to volunteer? Well, that's what you're doing every time you ignore Operational Risk Management (ORM). Now, let's discuss the myths of ORM—what it is and what it isn't.

♦ Myth No. 1: ORM is just for the fliers. **WRONG!** Nothing could be further from the truth. The "O" in ORM *does* refer to operators, but former Secretary of the Air Force Sheila Widnall has already made it clear we must extend the definition of "operators" to include "all our people with expertise and experience in the employment of air and space forces."

In other words, **YOU**, like everyone in the Air Force, are an operator, dedicated to ensuring that the Air Force's vision for the Twenty-First Century, "Global Engagement," becomes a reality. Because we all are operators, ORM does, indeed, apply to everyone.

♦ Myth No. 2: There's no need to understand ORM because it's just a passing fad that won't be here next year. **WRONG!** If you believe this, you don't have a clue about ORM. You've been practicing pieces of ORM every day. You just haven't

put it all together yet. ORM isn't going away because it's basic common sense, and it can save your life if you give it a chance.

♦ Myth No. 3: I can kick back and forget all about ORM when my shift ends. **WRONG!** ORM is all about identifying hazards, assessing risks, and putting controls in place to lessen those risks. Why wouldn't you want to reduce hazards and risks in everything you do, on and off duty?

♦ Myth No. 4: ORM is only for supervisors, commanders, and those staying in 30 years. **W R O N G !** Everyone can identify hazards and work to reduce risks, from the airman to the Chief of Staff. When everyone is involved in identifying hazards, collectively we can significantly reduce the risk of injury to everyone, from civilians, to military, on and off duty.

♦ Myth No. 5: I don't have time for ORM. Using it will slow me down and the mission will suffer. **VERY, VERY WRONG!** You don't have time to **NOT** use ORM. The time it takes to do a complete risk assessment and the assessment tools

you use will vary, depending on the complexity of the mission or task. Let's see...does it take more time to consider and lessen the risks, or stop everything to rush one or more people to the hospital and investigate why they were hurt? ORM is all about making sure our most valuable resource—you—is here tomorrow to get the job done.

row to get the job done.

♦ Myth No. 6: ORM means I can violate the regulations because I think the risk is acceptable. **WRONG!** Whatever gave you that idea? If the mission or job will force you to circumvent or violate regulations, always let your supervisor know. Every regulation in the Air Force has a waiver authority (usually the folks who wrote it or your



MAJCOM), and only one of them can authorize changes or waivers to the regulation.

♦ Myth No. 7: ORM is just another one of those *safety* programs so safety folks are the only ones who need to worry about it. WRONG AGAIN! The CSAF is a strong advocate of ORM and has already stated he expects every Air Force member and unit commander to support and build on its fundamentals. Sure, we safety professionals also believe that with better understanding and increased usage of ORM injuries will be reduced, lives will be saved, and the risks of mission failure will significantly decrease. Isn't that something every discipline and every person should help to promote, or don't you care if the mission succeeds or whether someone lives or dies?

So, now that we have examined the myths, let's take a quick look at two practical, down-to-earth examples to demonstrate what we are talking about.

Step One: Identify the Hazards (Mission/Task Analysis, List Hazards, List Causes, In-Depth Hazard Identification).

- Work must be done 20 feet above the ground, or
- I've been drinking, feel a bit drunk, and must get home.

Step Two: Assess Risk (Assess Hazard Exposure, Assess Hazard Severity, Assess Mishap Probability, Complete Assessment).

- Could fall and be seriously injured.
- Could cause a fatal car wreck.

Step Three: Analyze Control Measures (Identify Control Options, Determine Control Effects, Prioritize Risk Control measures).

- Use fall protection—harness, net—IAW AFOSH Standards.
- Take a taxi, use a designated driver, stay at a friend's house.

Step Four: Make Control Decisions (Select Risk Controls, Make Risk Decision).

- Decide to wear harness be-

cause it's the only fall protection available and I need to survive this job.

- Decide to take a taxi since I can't stay where I am, there is no designated driver available, and I need to go home.

Step Five: Implement Risk Controls (Make Implementation Clear, Establish Accountability, Provide Support).

- In both of the examples, YOU, the operator, are the responsible, accountable person to ensure the right risk controls (fall protection, taxi) are in place. This will not always be the case. Other situations may require your supervisor or commander to approve risk controls. If you can't make the right thing happen according to your risk assessment, regulations, or common sense, then you must pass the buck to your supervisor, or if off duty, to a friend, family member, or anyone who can help.

Step Six: Supervise and Review (Supervise, Review).

- Were the controls effective? Could better controls have been used? In our examples, was the harness used correctly? Was this the best taxi company to use, or would a designated driver be better next time?

Well, there you have it—ORM—not so bad after all, huh? It really doesn't take a genius, just common sense. We want you to come back to work tomorrow. As the Air Force continues to shrink, every person's contribution to mission success becomes more critical.

How long does it really take to do ORM and decide whether or not to wear a seat belt? Let's see...wear a seat belt and come home alive...don't wear a seat belt and stand a good chance of dying if someone hits me.



Want to try the ORM game again? How about deciding whether or not to drive that last 2 hours to get home? Should I stop and rest, or drive on, fall asleep, run off the road, and die?

One last time. I'm ready to start the job but don't have the right tech order. Should I take the time to go get it, or do the job without it, guess wrong on the sequence of steps, repair the aircraft incorrectly, and lose the plane and crew on the next mission?

Every one of these was a Risk Management decision. Understand the hazards in whatever task you undertake—on or off duty—and take steps to minimize the risk of injury or death. It's that simple. If you can't lower the risk to an acceptable level, then get help from someone who can. Don't forget the principles of ORM: Accept no *unnecessary* risk. Make risk decisions at the *appropriate* level. Accept risk when benefits *outweigh* the costs. And remember, you are not authorized to violate the regulations. Class dismissed. ■

Author's Note: Want to learn more about ORM? Point your browser to the Air Force Safety Center Web site at <http://www-afsc.saia.af.mil/AFSC/RDBMS/ORM/ormintro.htm>. You'll find the latest ORM information and be able to download an ORM training course. Safety offices can also point you in the right direction.



This cutaway shows both the Saab Active Head Restraint™, and the seat-mounted side air bag.

BOB VAN ELSBERG
Managing Editor

Editor's Note: This article is designed to advise readers of new automotive safety developments. The mentioning of manufacturer's names or specific vehicles is for informational purposes only and does not imply endorsement by the Air Force.

The emphasis on safety in new car designs continues to spawn improved technologies while refining current automobile safety features. Road & Rec took a look at some of the newest offerings at The Atlanta Journal-Constitution's International Auto Show, held 4-8 March at the World Congress Center in Atlanta. Here are some of the safety features in store for today's drivers.

Improved Air Bags

Air bags are not only here to stay, they're being offered in a growing variety of designs along with features designed to make them safer to use. In fact, in terms of new developments, 1998 could be dubbed the "Year of the Side Air Bag" as domestic and foreign auto manufacturers are rapidly including this safety feature in their vehicles.

The newest design in air bags is intended to protect passengers from head injuries when they are seated next to a door during a side-impact collision. The Inflatable Tubular System™ (ITS) air bag offered in BMW's 5- and 7-series deploys along the front side windows during a side impact. Last year, the Insurance Institute for Highway Safety tested the system in a series of crash tests. Researchers propelled two cars—one with and one without ITS—sideways at 20 mph into a 10-inch rigid pole and measured impact forces to the side of each dummy's head.

Developing a Head Injury Criterion (HIC) figure to predict injury severity, researchers found the car without ITS scored 4,729 while the car with ITS scored 620—well below the Institute's 1,000 figure considered as the borderline for severe head injuries.

Two other auto manufacturers, Volvo and Mercedes Benz, are also developing air bags designed to protect front and backseat occupants during a side-impact collision. The Volvo Inflatable Curtain™ (VIC) system consists of eight air bag-like compartments that run from the car's front to rear pillars. In the event of a side impact, the VIC would come down from the headliner



Depowered front air bags, side air bags, and structural reinforcement for the passenger compartment (seen in red), help protect passengers during an accident.

Photos by Bob Van Elsberg

above the doors and automatically inflate. The Windowbag™—as Mercedes Benz refers to its system—operates similarly and is intended to provide the same kind of protection. Both automakers hope to introduce these new air bags by the year 2000.

The most widespread development in air bags this year are depowered versions, offered by the majority of U.S. and foreign automakers in response to concerns about air bag safety. Inflating with 25 to 30 percent less force than earlier air bags, the new air bags are designed to be safer for smaller adults and children who may be in the front seat. In addition, all domestic small trucks and many imported trucks now feature air bag deactivation switches, a useful feature when small children must be transported in the front seat of a pickup. To

avoid leaving the passenger air bag turned off, these air bags recycle to the activated stage when the vehicle's ignition key is turned off and then back on again.

Because many vehicles have passenger-side air bags which cannot be turned off, several auto manufacturers are now placing air bag warning labels on the dash-



Passenger side air bag warning labels are now included with many new vehicles.

Anti-Whiplash Seats

In the event of a rear-end collision, a car's seats can play a major role in reducing occupant injuries. Recognizing that, two auto manufacturers have designed front seats which can change their shape or move to reduce the likelihood of whiplash—the most common injury in these accidents. Saab's Active Head Restraint™ is designed to move upward and forward to meet the back of the occupant's head before the whiplash movement can begin. Pressure against a plate in the seatback, created by the force of the collision and the occupant's weight, automatically positions the head restraint. The system operates mechanically and can easily be reset after use.

The Whiplash Protection Study™ seats designed by

continued on next page

WHIPS—Whiplash Protection Study



1. Normal Position



2. Parallel movement rearwards



3. Backrest tips rearwards

Volvo protect front seat occupants by allowing the seat-back and fixed head restraint to move as much as 1½ inches rearward during a rear-end collision. This movement cushions the occupant's body and head while absorbing the energy of the impact in the seat. The seat-back can also tip backwards to reduce the rebound force which occurs after a rear-end impact—a major cause of whiplash.

Improved Communications

The Radio Data System™, introduced by Cadillac into its 1998 line allows some 7,000 FM stations in the United States to provide drivers with traffic information and emergency broadcasts even while listening to a CD or cassette tape. Simply pushing the system's seek button will cause it to automatically tune to those stations providing traffic information. In addition, the system's video display—located on the radio's face—will flash "Alert" to advise listeners of impending emergency broadcasts.

The OnStar™ communications system is being offered as a dealer-installed option on several General Motors cars and pickup trucks. OnStar™ uses Global Positioning System technology to provide several safety-related driver services. For instance, whenever the vehicle's air bags deploy, the system contacts an advisor at the OnStar™ Center in Farmington, Michigan, so that emergency services can be dispatched if needed. Also, using a device similar to a cell phone, drivers can push a button to request emergency services. In addition, OnStar™ can help drivers get roadside assistance, travel directions, track the vehicle should it be stolen, and even un-

lock the doors if needed.

Better Handling

Of course, it's better to avoid having an accident in the first place. The Stabilitrac™ system—an improvement of Cadillac's earlier Integrated Chassis Control System™—is now optional on all Cadillac front-wheel-drive cars. The system uses a series of sensors tied in to the car's steering, suspension, ABS, and traction control to help prevent the car from sliding. In practice, if the driver turns the wheel but the car doesn't respond or understeers (turning less than desired), the Stabilitrac™ system applies the inside front brake to steer the car into the desired line. On the other hand, if the car oversteers (turning more than desired)—which could cause the car's rear-end to "fishtail"—the system applies the outside front brake to help keep the car under control.

Another automaker, Lexus, has added its Vehicle Skid Control™ system to all of its 1998 models. The system uses the sensors, actuators, and computer electronics of the vehicle's anti-lock braking system to help prevent skids and spins caused by understeer and oversteer. The system recognizes the driver's steering inputs and, if the car doesn't respond properly, adjusts engine power and applies individual wheel braking to help the driver maintain control.

Greater Highway Reliability

Low pressure tire sensors, designed to warn drivers when tires are losing air, have also been fielded and can be found on selected luxury cars. The technology is important beyond the more expensive car models because

it is required for the use of run-flat tires—currently available in only a limited number of sizes. However, as a wider selection of tire sizes become available, car buyers can expect to see low pressure tire sensors and run-flat tires on more mid- to low-priced vehicles.

“Limp home engine mode” is another technology designed to prevent drivers from being stranded. This allows engines to run for a short distance at reduced speed even after the loss of most or all of the engine coolant. The system typically reduces the number of cylinders on which the engine is running; for instance, a V-8 running on four cylinders, allowing the vehicle to be driven to a service station or repair facility.

What's New

Auto shows are a good place for manufacturers to show off their latest safety additions and give drivers a peek at the future through advanced-concept cars. Look for safety features being displayed in these auto shows to appear in the showroom soon. ■

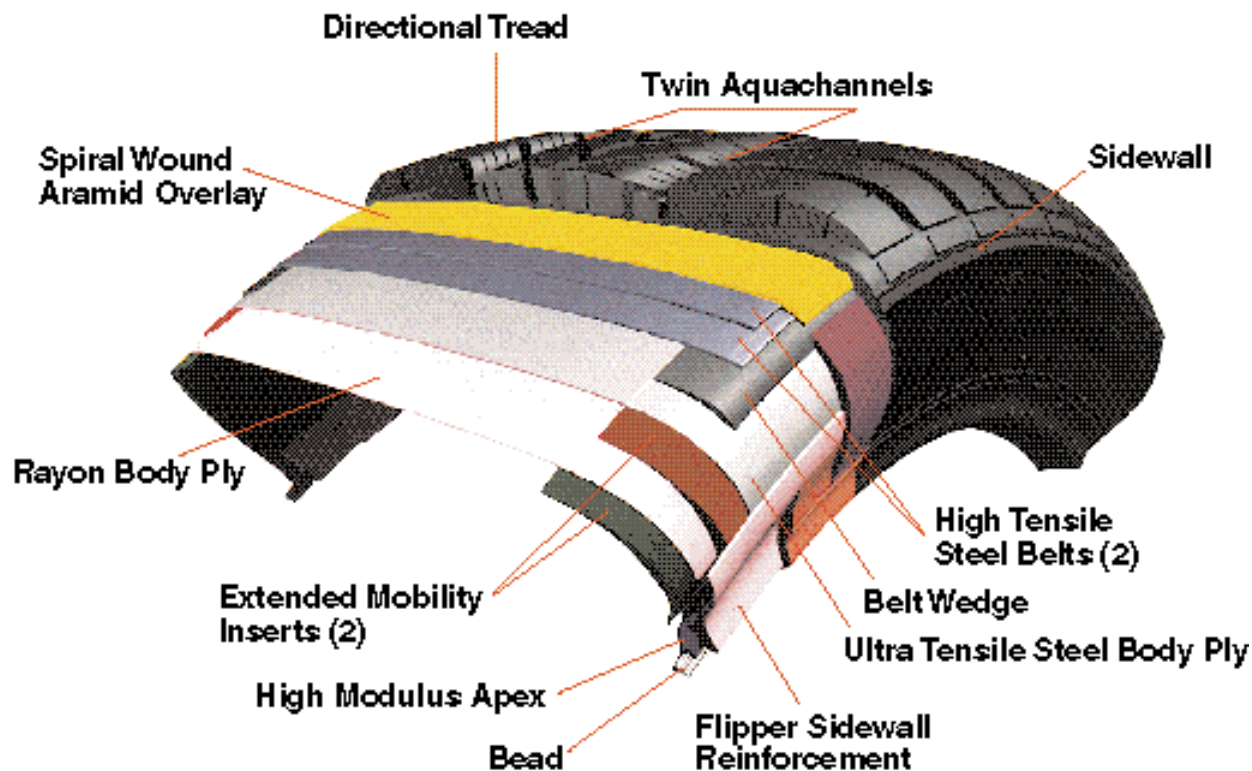
Note: For more information on automobile safety, readers are encouraged to visit the following Web pages: Insurance Institute For Highway Safety: www.highwaysafety.org—National Highway Traffic Safety Administration: www.nhtsa.dot.gov—National Safety Council: www.nsc.org



Run-flat tires mean motorists need not be stranded on the side of the road with a flat.



Isuzu's radical looking VX2 sport utility concept vehicle was shown at the auto show.



Artwork of *EAGLE AQUASTEEL EMT* provided by Goodyear

Run-Flat Tires Won't Let You Down

BOB VAN ELSBERG
Managing Editor

You've seen the commercials. A car runs over a jagged piece of metal, and the tire doesn't go flat. An engineer bores a hole the size of a golf ball in a tire that continues to support the weight of the vehicle. How is it done?

The answer is that these tires have extra-rigid sidewalls. For instance, Goodyear's Eagle Aquasteel EMT (Extended Mobility Tire), uses ultra-tensile strength steel wire belts and special extended mobility inserts at the tire shoulder (see diagram) to create that added rigidity. In addition, the tire bead—which is the contact point between the tire and the wheel rim—is designed to hold firm when the tire deflates rather than break and cause the tire to slip. The result is a tire that will continue to support the weight of the car at speeds of up to 55 mph for as long as 50 miles.

The safety advantages are obvious. In the event of a high-speed blowout, run-flat tires will help drivers keep their cars under control. In addition, drivers won't have

to change a tire on the side of the road with traffic whizzing by or be stranded in high-crime neighborhoods. Also, drivers who lack the strength or knowledge to change a tire can simply drive to a repair facility rather than having to call for emergency service.

Of course, the obvious question is, "How do I know I have a flat?" The answer is a monitoring system using radio transmitters mounted on each wheel rim and a receiver inside the car. The transmitters monitor tire pressure and provide constant information to the driver.

The system is not cheap. Current monitoring systems cost between \$300 and \$350 installed. The tires are also more expensive than normal radials. Drivers can expect to pay about \$20 more each for family car tires and about \$40 more each for high-performance tires. Costs are expected to come down as the tires become available in a wider selection of sizes and the system is offered on more new cars.

In addition to Goodyear's Aquasteel EMT, Michelin's MXV4 ZP is being marketed in the United States. Because run-flat tires are popular (a 1995 J.D. Power study ranked them as the most desirable new technology), plans are to have run-flat tires in sizes to fit 75 percent of the cars on the road this summer. ■

LETTER TO THE EDITOR

Dear Editor,

I'm writing because I feel strongly about the article on page 10 of the Spring issue, titled "Half a Seat Belt Isn't Enough." The article describes the tragic death of a young mother who was not wearing the lap belt in conjunction with the automatic shoulder harness in her car.

My personal opinion is that these automatic devices are extremely dangerous. We had a '91 Ford Escort which had the automatic shoulder belt, and although a habitual seat belt wearer for many years, I often found myself forgetting to fasten the lap belt. Because I could feel the shoulder strap crossing my body, I subconsciously assumed that the seat belting was complete. Luckily, I never had an accident while in this condition, and as time went on, I became accustomed to buckling the lap belt when I got into the car, even though our other vehicle had the normal shoulder-lap belt combination.

What would happen if, during an accident, the door flew open? Presumably it would trigger the belt to retract, as if you were leaving the car (on purpose). This could not be a good thing!

I wrote to Ford and told them I felt this arrangement was dangerous, and they must have listened, because our '97 Escort does not have this device!

The other big problem I had with that belt—which I referred to as the "strangler"—was that I was constantly catching my head and neck in it when getting out of the car. It simply did not retract fast enough.

As a matter of fact, the reason we no longer have the '91 Escort is that it was totalled almost 2 years ago when I was broadsided while driving home from work. Yes, I was wearing BOTH seat belts. The impact was not especially severe, so I do not believe the seat belt actually saved my life in this instance, but I am positive that it saved me from being banged up a lot more.

Thank you for a great magazine. I have found many articles of interest over the past few years that we have been receiving it in our office, and have learned some things about safety.

Shelley Pulliam
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Thank you for your letter and your comments on *Road & Rec*. It's very satisfying to know the stories we print touch a chord with our readers. One of the reasons we enjoy printing personal experience articles, such as the one you mentioned, is because so many of our readers can identify with the author's experience. As long as our readers keep sending these stories to us, we'll keep printing them.

—The Editor

WE'D LIKE TO PUBLISH YOUR STORY!!!

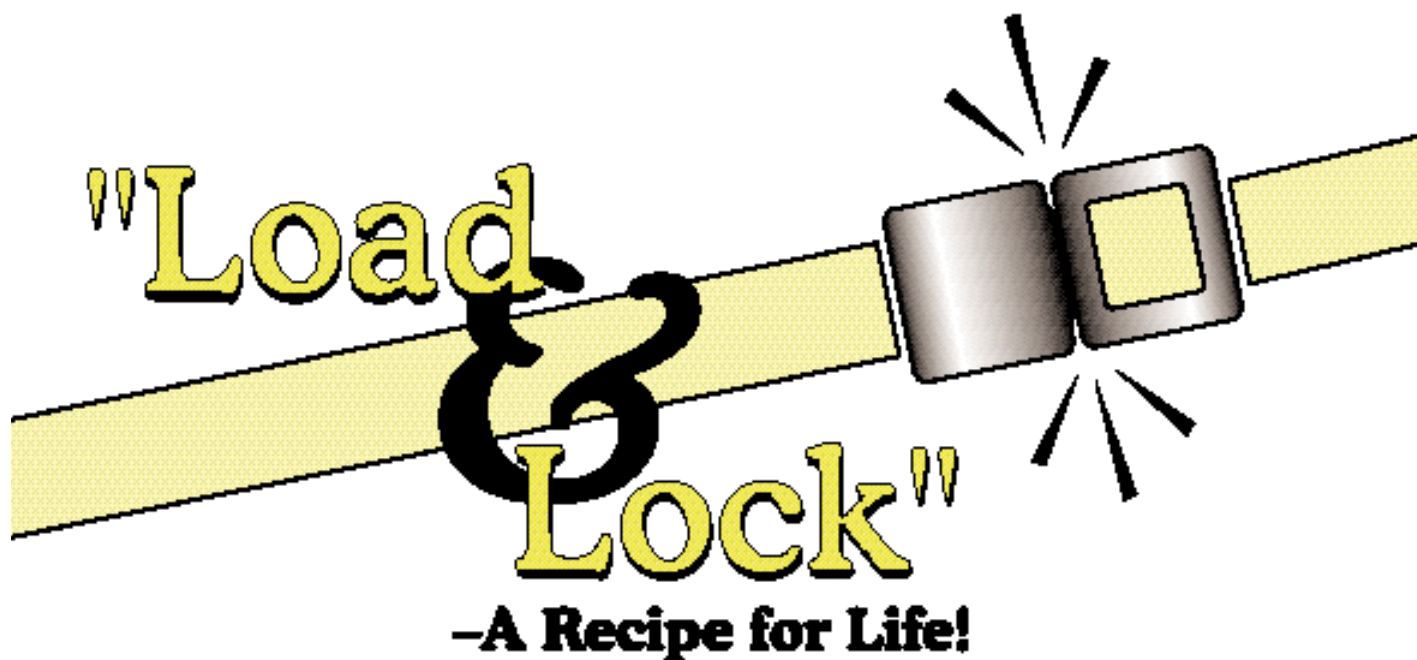
We know there are some great experiences out there just waiting to be told, so how about jotting them down. We'd like to hear from you—how your use of a seat belt or helmet saved your life or protected you from serious injury, or some lessons you've learned concerning driving or recreational safety. Sharing your experiences with other *Road & Rec* readers can be an excellent, entertaining way of helping us get the safety message out to your fellow airmen.

We accept articles of any length. Double-spaced hard copy is best. Any supporting color slides, color photos, or graphics you can contribute will be greatly appreciated. You can be sure your byline will accompany the story so that you will receive full credit for your contribution.

You can reach us by mail at HQ AFSC/SEMM, 9700 "G" Avenue S.E., Kirtland AFB, New Mexico 87117-5670, or call commercial at (505) 846-0983 or DSN 246-0983. You can also fax to DSN 246-0931 or E-mail to vanelabr@kafb.saia.af.mil.

We look forward to hearing from you and sharing your story!





"Load & Lock"

-A Recipe for Life!

LT COL JERRY HOLLERAN
602 TRSS/CC (AETC)
Torch, Oct 96

Nationally an estimated 40,000 lives have been saved within the past 10 years by the use of safety belts.

Struggling to stay focused during the umpteenth traffic safety briefing? Trying to keep your eyes open during that recurring first aid instruction? I know how you feel. For 17 years I've been there, done that. Thought I was the most safety-conscious, prepared-for-anything kind of guy in the Air Force—until one incredible morning in Arizona.

A work buddy and I were driving westbound on Interstate 40, halfway between Winslow and Flagstaff. We'd been TDY, and we were head-

ing home to Edwards AFB, California. We enjoyed a beautiful day with bright sunshine and endless visibility. My friend had no sooner remarked about the perfect driving conditions when the traffic came to a dead stop. Something was definitely wrong. I got out of the car and jogged between the rows of trucks. Nothing in my Air Force experience prepared me for what I saw.

What had once been a car had apparently left the eastbound highway, turned over several times in the rocky median, then become airborne until landing on its roof in the westbound lane. You could barely identify the twisted ball of metal, rubber, and plastic. A young man, injured and in pain, was lying on the roadway. A handful of people were watching with the same wide-eyed look of astonishment. No one was doing anything.

In retrospect, neither my friend nor I could pinpoint the moment we decided to get involved. Instinct took over. Realizing emergency services were at least 30 miles away, he began directing traffic around the site to keep the highway open. Passers-by began to look after the

man on the ground. I walked around the wreckage and found a person's hand hanging out of a window. It was warm to the touch and offered a faint pulse. Someone was still alive in that mess. One space was wide enough to allow entry. I kicked out the glass and crawled in. A young woman was unconscious, hanging upside down in her seat belt. Her neck was turned around, and her face was lying in rubble. She wasn't breathing.

I was scared and apprehensive, my mind reeling with a laundry list of her possible injuries. What do I do first? In the back of my mind, a small voice nagged at me, prompted by years of repetitive first aid training. I gently turned her head and swept her mouth with my finger to clear an airway. After what seemed like an eternity, she drew a short, labored breath. I looked for signs of bleeding and found only superficial cuts. She still had a pulse. She still had a chance.

With my free arm, I frantically searched for other victims, but my limited range yielded nothing. The woman's skin color slowly turned blue. She needed more air. The con-

finer space made mouth-to-mouth resuscitation impossible. I was afraid to move her and aggravate her injuries, but there seemed no other choice. By now, my companion was outside offering assistance. I told him we had to find some way to get her out of the car. He directed three other men to help him, and in what can only be described as a Herculean effort, they grabbed the remains of a smashed door and wrenched it open, making deep grooves in the highway surface. I cut the seat belt and eased her down. Together, we supported her through the opening.

By the time I backed out of the wreckage, someone was performing resuscitation, and sirens could be heard in the distance. The worst of this nightmare was over, or so I believed. An ambulance arrived with two medical technicians. They divided, and each headed to one of the victims. The technician attending the young woman quickly had his hands full and asked for assistance. He inserted an airway, started an IV, and prepared for an emergency tracheotomy.

My friend operated a breathing bag, and I monitored vital signs. Her color improved, and her blood pressure raised, but she remained unconscious. A helicopter arrived. We placed her on a back board, and in moments she was on her way. The young man was whisked away by ambulance. People dispersed. What had seemed like forever was actually 45 minutes. The only sound I heard was the pounding of my own heart.

In time we came to know the complete story. They were 20-year-olds, newly married, and had set out

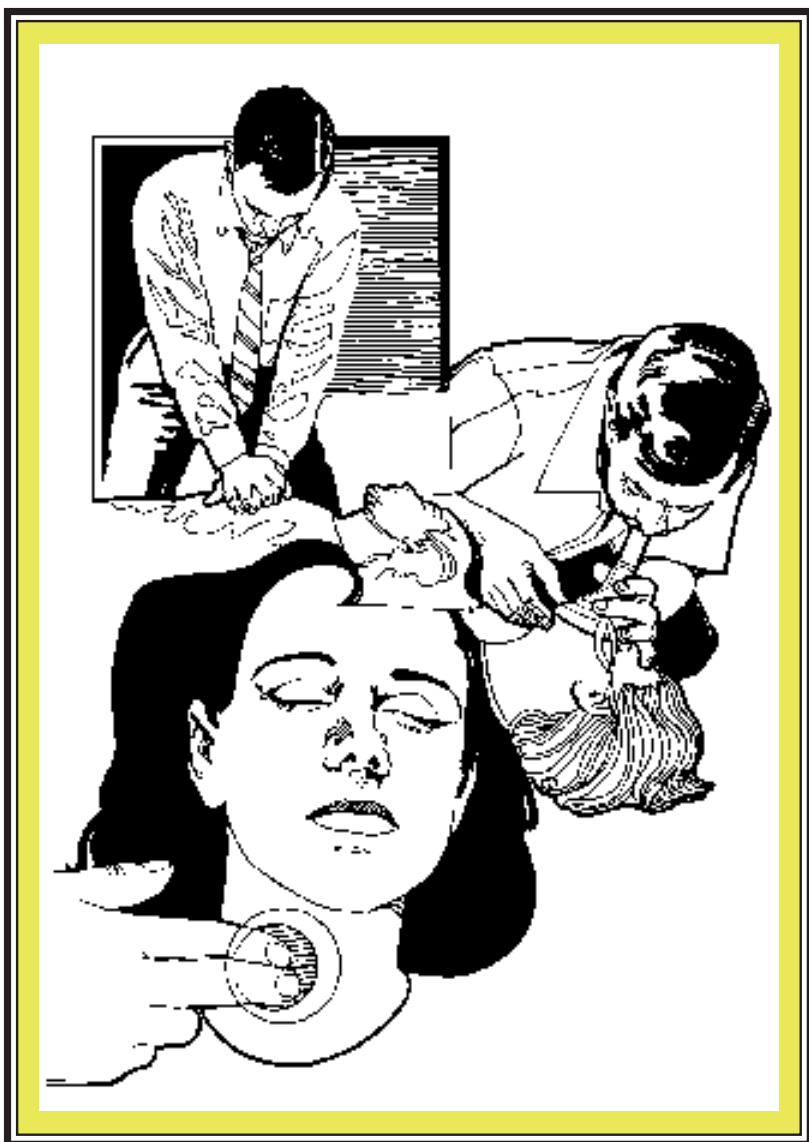
from northern California to begin their lives together in Texas, deciding to drive straight through to save time and money. *He removed his seat belt and stretched out to rest.* She fell asleep at the wheel and lost control of the car. As the car tumbled, he was thrown out of the hatchback and onto the highway head first. She had no memory of the accident, which was probably just as well. Her neck was broken, but she was expected to make a complete recovery. He lapsed into a coma during the ride to the hospital and passed away 2 days later.

When I close my eyes and recall the accident scene, I'm still amazed

anyone could have survived in the wreckage. Using a seat belt clearly saved that young woman's life. My family and I have always been seat belt advocates, so "load and lock" remains the order of the day. My wife and I put a lot more effort into trip planning now and schedule planned rest stops.

Give me a multiple choice test on "what to do in an emergency" and I doubt I'd come up with all the right answers. On that morning, the many years of training kicked in and guided my actions.

Now, safety briefings and first aid classes have my complete attention. I hope they have yours. ■



Fishing for Trouble

BOB VAN ELSBERG
Managing Editor

I carefully wrapped a length of thread around the well-ripened, bloody chunk of mackerel, tying it to the hook I hoped would soon hold a catfish. A.G. Johnson, my father-in-law and an experienced fisherman, was sitting at the other end of the boat. A.G. could cast with precision, consistently landing the bait right where a fat channel cat might be hiding. On the other hand, I was lucky if I could get the bait over the right side of the boat. Reaching back with the pole, I made my best attempt at an overhead cast but, as usual, swung a bit wide. Who-o-osh! The baited hook flew past A.G.'s left ear—missing it by a whisker—while splattering a stream of mackerel juice along the side of his face.

"Bob, if I wanted my lunch now, I'd open up my bag and eat it," A.G. said, giving me a sideways look that made me feel like crawling into the tackle box and pulling the lid shut. I fiddled with the reel, pretending

the line was snarled because I was too embarrassed to look back. I'd almost sent my father-in-law's ear over the side with the rest of the bait. And while that might have been a novel way to catch catfish, I doubt he would have approved.

Thanks to a bit of luck, we didn't have to deal with a nasty injury. There are, however, about 85,000 fishermen each year who aren't so lucky. They suffer fishing injuries serious enough to require hospital treatment. And while most hookings aren't bad enough to require a doctor's care, they can be painful and lead to serious infections. Here are some tips to help keep you from landing yourself or a fishing partner in the hospital.

Hooked on Fishing

- Always hold the hook or lure tightly in your fingers. Flailing hooks are liable to catch anything they come in contact with. Also, sudden moves by live bait can get you snagged.
- Carry a wire cutter or sharp pliers and disinfectant in your first aid kit.

- Be especially careful when dislodging lures and hooks which have gotten snagged on submerged branches, brush, or roots. For one thing, you can't see what you're doing, and the tension when the lure comes loose could cause it to spring up and sink the hook into your hand. It's best to invest in a hook retriever. Also, if your lure gets snagged underwater, don't try to break it free by reeling in the line. If the lure breaks free, the pole's spring action can send the lure flying back out of the water at you or someone else nearby.

- Point the tip of your pole toward the water when you're casting, not toward the face of your companion.

- Don't cast over a fishing partner's head. Always look around before making a cast.

- When landing a fish, work from the rear of the boat and use a net. Some species, such as catfish, have stiff spines in their fins which can cause painful injuries, so learn how to handle the fish properly.

- If you are snagged by your own hook, don't try to back it out. Instead, push it through the skin until the point and barb are exposed. Snip them off and also snip off the eyelet. Now pull the hook through the skin following its natural arc. Clean the wound and apply a disinfectant. Watch for infection.

- When walking, it's best to break down your fishing pole. If you can't, carry it with the tip trailing you and the hook or lure firmly attached to a hook holder on the pole. If your pole doesn't have a hook holder, you can also catch the hook on one of the pole's line guides.

Staying Afloat

Drowning is the most common cause of the hundreds of fishing-related deaths each year. To make sure you drown the worm instead of the fisherman, do the following:

- Always wear your personal flotation device (PFD).

- Don't overload the boat.

- Load the boat properly, keeping the heaviest loads in the middle and bottom of the boat.

- Never stand on the bow when the boat is in motion.

- Load and unload the boat one person at a time.

- Don't change places in a boat in the middle of the water. Come to the shore.

- During a storm, lay low in the boat and point the bow into the waves to avoid being tipped.

- At night, slow down and use the running and marker lights.

- If the boat capsizes, stay with it until help arrives. Don't remove your clothing or boots. They will help keep you afloat by holding air and also help keep you warm.

Wading

- Never wade alone.

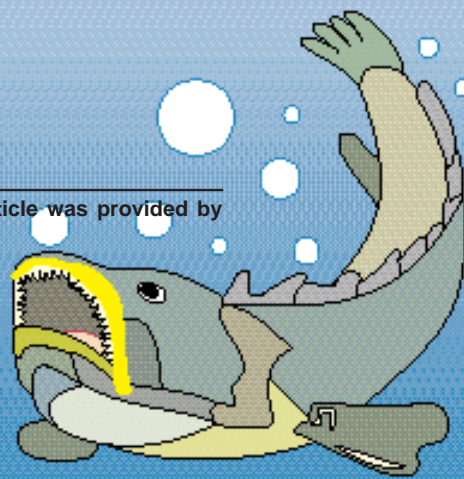
- Let someone know where you will be.

- Wear a shoe or boot that will provide maximum traction on the slippery rocks underfoot.

- Unseen holes or drop-offs are a dangerous hazard. Test each step carefully in advance by taking a tentative shuffle step. Better yet, use a wading staff to measure the depth of the water before each step.

- Wear a PFD. ■

Information for this article was provided by *Safety Times*.



Into Thin Air



Photos by MSgt Perry Heimer

BOB VAN ELSBERG
Managing Editor

The inside of the Cessna Turbo 207 grew steadily colder as the pilot climbed toward 10,500 feet above ground level. The skydivers, seated on the bare metal floor behind the pilot's seat, waited for the plane to level off at jump altitude. When it did, two skydivers rolled up a piece of black fabric covering an opening in the side of the aircraft. One skydiver turned around, slid to the opening, then tumbled out backwards. The second jumper grinned broadly, then dove headfirst into the morning sky.

Now it was the new guy's turn. Strapped into the front of a tandem jump harness, CMSgt Mike Baker swung his legs out the opening, his feet dangling nearly 2 miles above the earth. Suppressing the urge to grab the edge of the opening and hold on, he folded his arms across his chest as he'd been taught. Behind him in the rear section of the harness, Rich Greenwood—Baker's instructor—helped him angle into the wind. As the pro-

peller blast whipped around them, Greenwood pulled Baker's head back firmly, then rocked them both forwards and back. As they rocked forward the third time, they leaned forward and rolled into the sky. It was like nothing Baker had ever experienced before.

"It was absolute, total disorientation," he said. "We tumbled about 1,500 feet before we finally established the proper free-fall position...I was seeing little bits of the horizon and sky flashing by."

He described the sensations: "We got into the flying position, and the rush of the wind, weightlessness, and cold—all at one time—were incredible. Then Rich pulled the ripcord, and as loud as it was around us, and as quickly as we were going and sensations were changing, it all suddenly stopped. We had a good 'chute and were like a leaf in the wind, except we could control where we were going. It was dead calm. All you could hear were the birds and a light breeze around us.

"After the canopy opened, Rich said, 'Down there on the ground is your target. Look which way the wind sock is blowing. We want to fly into the wind to reduce our speed and do a stand-up landing.'"

After they landed and unhooked, a pumped Baker turned around and gave Greenwood a high five. According to Greenwood, safety and training advisor for Skydive New Mexico, tandem jumps are one of the safest and most exciting ways to get started in skydiving.

"A tandem jump gives you a total introduction to the sport." He explained, "You get an airplane ride, a long free-fall, a canopy ride, and a landing without the 6 hours or so of instruction required to jump by yourself. Also, the instructor is there to handle any emergencies that might arise."

Preparation for a tandem jump is simple and can be done in less than an hour, according to Greenwood. "I use a video tape as a training aid. We have several tandem jumps on the video, and I run through them with the students. I discuss exiting the airplane, stability in free-fall, altitude awareness, and how to read the altimeter. I tell them at what altitude I expect them to pull the ripcord. I tell them that once the



Setting the altimeter accurately is very important.

main parachute opens, I'll be giving them instructions on how we're going to steer and land."

During the training, Greenwood has the students lie

Baker (left) and Greenwood practiced exiting the aircraft safely as part of the skydiving training.

on a creeper board, then spins them around to give them a taste of what will happen when they leave the airplane. Uppermost in his mind is having the student get into a stable free-fall position as quickly as possible.

"Basically, it's arms and legs out in a kind of 'X' position like you've seen in the movies—that's pretty obvious," he explained. "What may not be so obvious is the importance of getting a good arch to your back. You

continued on next page



Unpredictable winds in the landing area prevented a stand-up landing – but neither Baker nor Greenwood were hurt.

throw your head way back, put your feet up on your butt, push your chest and hips forward, and shape your body like a banana to lower your center of gravity. Since you're naturally going to fall with your center of gravity down, you'll fall in a face-to-earth position. As long as your arms and legs are symmetrical, you won't go spinning around. Being stable is important when you deploy your parachute, because you don't want to be spinning or tumbling and become tangled."

Greenwood explained one of the advantages to tandem training is that the instructor can correct any mistakes the student might make. He pointed out, "It's in the instructor's best interest to do so!" Securely linked together in their tandem harness, whatever happens to one, happens to both.



"Boss – let's do it again!," Baker said after landing.

"About 2 or 3 minutes before the actual jump is when we snap our harnesses together," he said. "We go through a verbal checklist while I hook the harnesses together in sequence. The student follows through to

make sure all of the points of attachment are made. I make sure the student's altimeter agrees with mine and that the student's ripcord is in place. This not only increases safety by having the student check on me, it also gives the student more confidence knowing we're hooked together and everything is going to be cool."

Getting out of the aircraft safely requires timing and coordination, according to Greenwood.

"The student sits in the opening with his feet hanging out while the instructor is on his knees behind him," he explained. "We give a little count—Ready—set—go!—then launch out toward the front of the aircraft. We go into our good, hard arch and try to get our control surfaces effective."

Once they've done that, the instructor deploys a 3-foot-diameter drogue parachute designed to slow the pair to about 120 mph during their free-fall. Greenwood explained that without the drogue chute, the pair would fall at 180 to 200 mph. "The sooner we get the drogue deployed, the more free-fall time we have," he said.

Normally, it's up to the student to pull the ripcord—although the instructor has a separate ripcord for emergency situations. For safety's sake, students are taught to pull the ripcord at 6,000 feet.

"Their primary responsibility is to know what altitude they're at, so I like to see them checking their altimeter occasionally during free-fall," Greenwood said. "If we pass through 6,000 feet and I notice they haven't looked at their altimeter, I'll gently grab their wrist and hold the altimeter in front of their face as a small hint. If they don't pull the ripcord by 5,000 feet, then I'll go ahead and pull it."

Tandem jumps aren't the only way new skydivers can get started. Those who don't want to be harnessed to an instructor can do a static line jump. In these jumps, a line attached to the student's parachute and to the inside of the aircraft deploys the parachute just after the student jumps out. There's no free-fall involved, but the student gets a long, slow ride down under the canopy. However, if they get into trouble, they must be prepared to handle it. Because of that, their training is much longer and more rigorous, explained Bill Pearson, president of Skydive New Mexico.

"Static line classes take from 6 to 8 hours," he said. "We start off with book training. We show them the parts of a parachute and explain how it works. We make sure they understand that if they're flying a canopy with a 20-mph forward speed into a 20-mph wind, they're virtually going straight down. We also explain that flying that same canopy with a 20-mph tailwind means they're doing 40 mph across the ground. They don't need to land at that speed."

He continued, "After familiarization, they're shown videos or pictures of malfunctioning canopies. They're taught how to recognize a malfunction and also how to do a controllability check and make sure the canopy is flying correctly after it's deployed. Once we get through that, we put them in a hanging harness, which simulates a parachute complete with cutaway handles and reserve ripcords. We suspend them just above the ground and



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Photos, on this page, by Bill Pearson



Are You Ready for a Heat Wave?

Heat Wave

BOB VAN ELSBERG
Managing Editor

It was the first week of June, and it was hot enough to make a rock sweat on the flightline at Dobbins AFB, Georgia. This was my second summer in the deep south, and I still hadn't gotten used to the heat and humidity. After an hour and a half of being baked by the sun and broiled by the heat radiating up from the asphalt, my head was spinning. I touched my arm and noticed my skin felt cool and clammy. My stomach had also begun to churn. I wasn't a doctor, but I knew this wasn't good.

I got released from my task and headed back to the office. Sitting down and drinking a cold soda, I thought I would be all right in just a few minutes. A half hour passed, my skin remained cool and clammy, and I couldn't collect my thoughts. My NCOIC came by to check on me. After a few minutes, I was shocked to hear him say, "Bob, you're suffering from heat exhaustion."

He was right. I looked up the symptoms for myself. What surprised me was how I'd gotten to that point without realizing it. I'd been so busy working on the flightline I didn't notice the warning signs. If I hadn't stopped and moved out of the sun when I did, things could have been much worse.

This summer, don't make the same mistake I did when you're working or playing. Know the symptoms of the different kinds of heat injury and how to treat yourself or others.

Here's some information from the Red Cross which can help you avoid or properly respond to heat injuries.

Recognizing Heat Injuries

Heat Cramps: Heat cramps are muscular pains and spasms in the abdomen and legs caused by heavy exertion. It's generally thought the loss of water from heavy sweating causes these cramps.

Symptoms: Muscular pain accompanied by heavy sweating.

Treatment: Get the person to a cooler place and have him or her rest in a comfortable position. Lightly stretch the affected muscle and have the victim drink half a glass of cool water every 15 minutes. Do not give the victim liquids with alcohol or caffeine as they can make the conditions worse.

Heat Exhaustion: Heat exhaustion typically occurs when people exercise vigorously or work in a warm, humid place where the body loses fluids through heavy sweating. Blood flow to the skin increases, which decreases blood flow to vital organs. This results in a mild form of shock. If not treated, the victim's body temperature will continue to rise, and they may suffer heat stroke.

Symptoms: Cool, moist, pale, or flushed skin; heavy sweating, nausea, or vomiting; dizziness; and exhaustion. Body temperature will be near normal.

Treatment: Get the person out of the heat and into a cooler place. Remove or loosen tight clothing and apply cool, wet cloths, such as towels or sheets. If the victim is conscious, give the person half a glass of cool water to drink every 15 minutes, making sure the individual drinks it slowly. Do not give the victim liquids which contain alcohol or caffeine. Have the victim rest in a comfortable position and watch carefully for changes in the person's condition.

Heat Stroke: Heat stroke is life-threatening. The victim's temperature control system, which causes sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the victim isn't cooled quickly.

Symptoms: Hot, red skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing. Body temperature can be very high—sometimes as high as 105°F. If the person was sweating from heavy work or exercise, the skin may be wet; otherwise, it will feel dry.

Treatment: Heat stroke can be fatal, so get help fast. Call 911 or your local emergency number. Move the victim to a cooler place and quickly cool the person. If possible, immerse the individual in a cool bath, wash down with a hose, or wrap wet sheets around the victim's body and fan the person. Watch for signs of breathing problems. Keep the victim lying down and continue cooling the person's body any way you can. If he or she refuses water, begins vomiting, or there are changes

in the level of consciousness, don't give the victim anything to eat or drink.

Surviving a Heat Wave

Slow down and avoid strenuous activity. If you must take part in strenuous activity, do it during the coolest part of the day, which is usually between 4 a.m. and 7 a.m.

Stay indoors as much as possible. If air conditioning isn't available, stay on the lowest floor and out of the sunshine. Electric fans don't cool the air, but they do help sweat evaporate, which cools your body.

Wear lightweight, light-colored clothing. Light colors will reflect some of the sun's energy.

Drink plenty of water regularly, even if you're not thirsty. Your body needs water to keep cool.

Water is the safest liquid to drink during heat emergencies. Avoid drinks with alcohol or caffeine. They may make you feel good briefly, but they will worsen the heat's effects on your body. This is especially true of beer, which dehydrates the body.

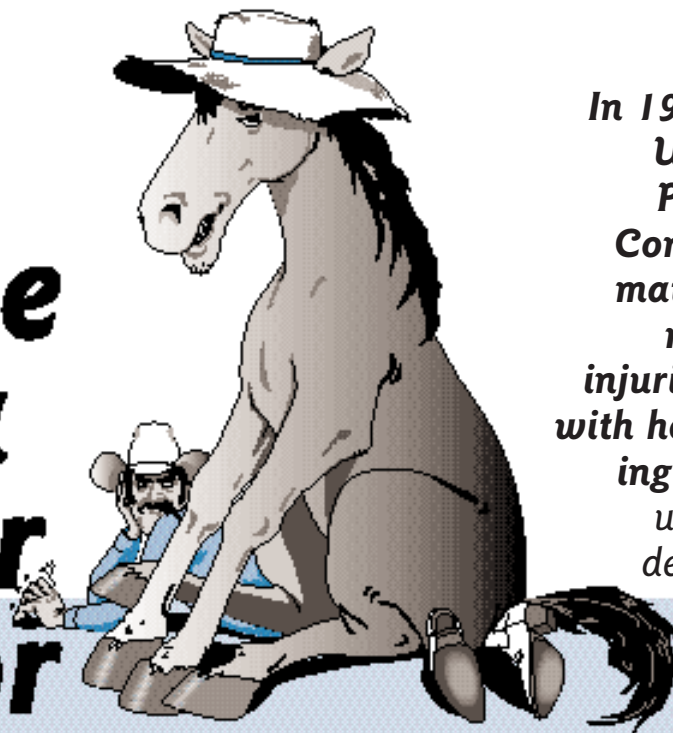
Eat small meals and eat more often. Avoid foods which are high in protein as they will increase metabolic heat.

Avoid taking salt tablets unless directed to do so by a physician.

Most of the prevention steps for heat injury are plain common sense, so use your head, plan for the conditions, and don't push the limits. ■



A Horse of a Safer Color



In 1992 alone, the U.S. Consumer Product Safety Commission estimates there were nearly 74,000 injuries associated with horses and riding. There may be upwards of 150 deaths annually.

Courtesy Safety Times

Horses are beautiful creatures, but not nearly as smart as they are handsome. People need to do the thinking. Here are some things you should consider before climbing aboard Old Paint.

Dress Properly

- Always wear a properly secured, hard-shell riding helmet that has been tested and approved by the Safety Equipment Institute. Wear the helmet at **all** times when working around horses.
- Two million Americans suffer brain injuries annually. Over one million will retain some form of permanent neurological or physical impairment. The riding helmet is a must!
- Wear long pants and boots or shoes with at least a half-inch raised heel. The long pants will prevent chafing, and the heel will prevent getting one's foot caught in the stirrup and being dragged.

Before Mounting

- First and foremost, beginning riders should have competent riding instruction! Ask for a quiet horse.
- Check all leather pieces for wear or cracking.
- Check stitching for loose or broken threads.
- Inspect the cinch strap that secures the saddle to the horse's back. It should be solid and tight.
- Be sure your stirrups are properly adjusted.

On and Around the Horse

Horses are timid animals that frighten easily.

- When approaching a horse:
 - Speak softly so the animal hears you coming.
 - Walk where the horse can see you.
 - Stroke him on the neck or shoulder first.
 - Approach from the shoulder at an angle.
- Do not run, yell, or play around a horse.
- Avoid a horse's blind spots. Do not walk or stand directly in front of or behind a horse. If you must walk behind a horse, stay at least 15 feet away.
- Do not feed a horse from your hand.
- Do not touch a strange horse unless its owner says the horse would welcome the attention.
- Walk around a horse, not under its body or its neck or tie rope.
- Never tie or wrap yourself to a horse. The Horsemanship Safety Association says you should always be able to escape your horse in 3 seconds or less.
- If you need to adjust your equipment or clothing, dismount.

On the Road or Trail

Most riding accidents occur when a rider is separated from the horse in an untimely manner. To stay with your horse:

- Watch for traffic at all times.
- Leave at least one horse length of spacing between your horse and other horses.
- Ride single file.
- Ride on the soil.



MAJ JEFF THOMAS
HQ AFSC/SEFF

Mountain biking in Albuquerque, New Mexico, is rocky, technical, sandy, occasionally steep, but always exhilarating. Reminiscent of the Arizona desert minus saguaro cactus, I've always been aware of the possibility of unexpectedly encountering "nasty" desert creatures that can inflict great harm and pain to the nonvigilant. However, months of riding the narrow trails around ABQ had yielded only brief encounters with frightened rabbits running for cover and a tarantula slowly meandering across a trail.

Early one midsummer morning, as I started out on an all too infrequent mountain bike trek into the desert, the possibility of encountering a nasty desert creature held about the same possibility it usually did—slim to none. That was soon to change, however.

Working down a particularly narrow trail with an upslope on one side and a dropoff on the other, I was routinely checking the trail 10 to 15 yards in the distance before returning to scan the area in front of me for basketball-size rocks and tree roots. Watching the trail ahead, I noted what appeared to be a large, fully exposed tree root laying diagonally across the trail. Knowing that I wouldn't be to that spot for a few more seconds, I continued checking the trail right in front of me, then scanning the trail further ahead. Mentally, howev-

er, I began to contemplate what line to take over or around the still-distant obstacle.

As I continued swiftly downhill, identifying the obstacle became a greater priority. Closing swiftly, I soon noticed a row of alternating black and white stripes near the end of the "root"—which got my attention because tree roots typically don't have stripes. Although I grabbed a handful of brake, my downhill momentum carried me forward. As I got closer, I noticed a narrow row of rattles running sideways to the stripes. That bit of information left me with no doubt—I was closing on a rattlesnake, the full length of which I hadn't yet seen. (Later research revealed it to be a western diamond-back.)

Looking for an out, the tree-lined upslope and downslope on either side of the trail wouldn't allow it. Stopping before or hopping over the snake were clearly the only options. I quickly realized I'd lost too much speed to hop over the snake, so stopping before I got to it was the only alternative.

As I rolled to a stop, my front wheel butted up against the snake's midsection. Balancing precariously on the bike, I tried to spot the snake's head before dropping one foot. It didn't take long (milliseconds?) to see a set of fangs pointed in my direction attached to a lunging, uncurled rattlesnake. Without having put a foot down, I leapt rearward off the bike, instinctively grabbing the nose of the bike's saddle to pull the bike back with me.

continued on next page



Photos by MSgt Perry Heimer

Having seen enough and not wanting to be snake fodder, I turned and retreated back up the trail (okay...I ran) out of harm's way. Once clear, with adrenaline pumping, I climbed back on my mountain bike and rode up the trail and out of the desert at what was likely a world record pace.

Once home, I began to contemplate my encounter and quickly realized that I knew very little about rattlesnakes and even less about how to treat a snakebite. A quick trip to the Internet revealed a wealth of information. As I attempt to cover the highlights here, my goal is not to make you a snakebite expert or profess to be an expert myself, but rather to provide some insight into



what I learned and will take out to the trails next time I ride or hike.

There are two families of venomous snakes in the United States, the majority of which are pit vipers from the Crotalidae family (rattlesnakes, copperheads, and cottonmouths). Equipped with long hollow fangs and a system to inject venom through those fangs, pit vipers can retract the fangs when at rest and spring them rapidly into biting position.

The other family is Elapidae, which includes coral snakes, found chiefly in southern states. Coral snakes have small mouths and grooved fangs which require chewing to get venom into a victim, resulting in less venom delivery than pit vipers. As a result, people bitten by coral snakes lack the fang marks of pit vipers, often making the bite hard to detect.

The majority of venomous snakebites come from pit vipers. According to experts, 25 percent of all pit viper bites don't involve venom injection, and another 15 percent are so trivial they require only local cleaning and tetanus shots. The potency of venom can vary depending on such factors as the type of snake, the snake's age, time of year, how long ago the snake ate, etc., all of which make it difficult for doctors to characterize a "typical" venomous snakebite.

About 800 people a year receive venomous bites in the United States, 9 to 15 of whom die (mostly elderly, children, and untreated cases). Upwards of half of all bites are caused by handling or taunting venomous snakes or failing to move away from the snake once it has been sighted. Bottom line: Most victims were actually aware the snake was present before they were bitten.

Most people panic after being bitten by a snake.

Statistics indicate that despite all the hype, poisonous snakebites, while serious and painful, are rarely fatal. The best advice if bitten—although easier said than done—is to remain calm.

Fear may cause symptoms that include nausea, rapid heart rate, cold, clammy skin, dizziness, etc. It's important these "fight or flight" reactions not

be mistaken for symptoms resulting from the bite. Excessive bleeding due to the anticoagulation effect of the venom may occur. Local discomfort in the area of the bite may be severe; pain, redness, and bruising of the site usually occur within 30 minutes of venomous bites.



What usually creates the fear and panic is the burning sensation which rapidly graduates to severe pain. Expect swelling, so remove constricting items such as rings and bracelets from the bitten extremity. If able, wash the area with soap and water (a snake's mouth isn't very clean), immobilize the bitten area, and, if possible, keep it lower than the heart. Other symptoms may include a "rubbery" or "metallic" taste in the mouth and tingling of the lips, depending on the type of snake involved.

Surprisingly, most medical experts agree that traditional field treatments such as tourniquets, pressure dressings, ice packs, and "cut and suck" snakebite kits are generally ineffective and possibly dangerous. The one exception to the above: If treatment is more than 30 minutes away, a bandage or constriction band—which is not a tourniquet—should be wrapped 2 to 4 inches above the bite to help slow the venom. The bandage shouldn't cut off blood flow to the vein or artery. A good rule of thumb is to make the band loose enough to allow a finger to slip under it. Additionally, the John Wayne approach of making an incision and sucking the venom out of the wound is frowned upon due to the possibility of infection from the knife, poor to nonexistent surgical skills, the danger of further infecting the wound with bacteria from the human mouth, or absorption of the victim's venom into cuts or sores in the mouth, etc.

The consensus among doctors seems to be that a poisonous snakebite is one of those conditions you cannot treat in the field. Instead, transport the victim to a facility where they can receive antivenin as quickly as possible. In an isolated wilderness setting, immediate evacuation should be started. Research indicates walking the victim out is reasonably safe unless severe signs and symptoms occur. According to one source, "There is little evidence in literature that activity can worsen the outcome associated with a snakebite...Waiting for a big rescue to be organized and executed could delay getting the patient to antivenin."

In an urban setting, have the patient remain at rest with the wound immobilized and call emergency medical services. The main thing, regardless of the environment, is to get to the hospital without delay because the intravenous administration of antivenin is the only therapy of proven value. Keep in mind that several hours usually elapse before the severe toxic effects of the venom take hold. According to one source, "Victims of snakebites who received medical attention within the first 2 hours of being bitten have an excellent chance of survival."

The above is all solid counsel. However, the best advice is to avoid getting bitten in the first place. The following is a generalized list of suggestions:

- ❖ Nearly all snakebites in humans are the result of the snake defending itself when it feels threatened. If you unexpectedly confront a snake, stay calm, back away, and do nothing to threaten it. Keep in mind that snakes can rarely strike effectively at a distance greater than one-third their body length.
- ❖ Snakes like to hide under rocks, logs, and brush to protect themselves from the sun or cold. Don't reach

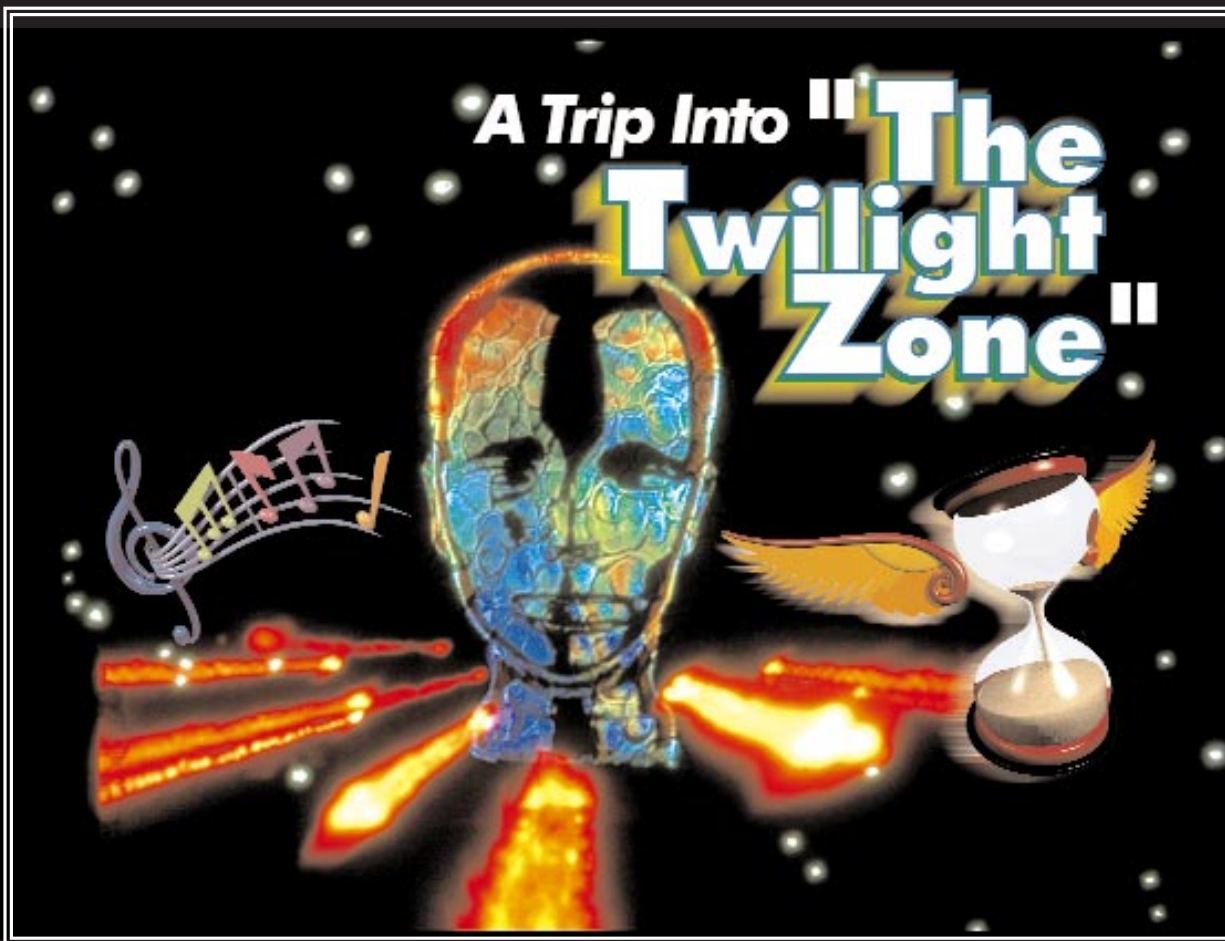


blindly into or onto areas such as rocky ledges where snakes might be sunning themselves.

- ❖ Be aware of your surroundings at all times. Don't blindly wander through the woods, weeds, trails, bushes, or old abandoned buildings. Remain on hiking trails as much as possible.
- ❖ Walk heavily. Snakes sense the vibrations and generally will flee.
- ❖ Wear heavy pants and high leather boots in areas where snakes are likely to be found.
- ❖ Lastly, don't handle dead snakes. A reflex strike from a dead snake can be just as dangerous as a bite by a live snake.

By applying the above "encounter prevention" information, hopefully you'll never have to apply any of the "post bite" information. ■





BOB VAN ELSEBERG
Managing Editor

"You unlock this door with the key of imagination. Beyond it is another dimension—a dimension of sound, a dimension of sight, a dimension of time. You're moving into a land of both shadow and substance, of things and ideas. You've just crossed over into the Twilight Zone."

You can almost hear Rod Serling opening another episode of his eerie TV classic. This opening, however, is not a piece of fiction. This time it's from real life—from an accident that happened last summer. Changing the names and taking a little poetic license, let me transport you from your comfortable chair into... "The Twilight Zone."

"Hey Rich, who's gonna be here

tonight?"

"Bill, we're going to be packed. I've got the whole family and half the neighborhood coming over. It's going to be a happenin' Fourth of July party. We're gonna barbecue some burgers, put on some tunes, and party down."

"Sounds good to me. You gonna do the bonfire tonight?"

"Oh yeah—that's a given. Everybody looks forward to that."

"Great. Cheryl and I will be over when the party gets started."

Several hours later...

"Awesome party, Rich."

"Hey, Bill, there's still some burgers left."

"Naw—I'm about to explode now. I think I'll just enjoy the fire and mellow out."

The sun has sunk below the horizon. The bright summer day fades

into darkness as the guests talk and tell jokes around the fire, listening to it crackle and watching the flames dancing on the wood. An hour and a half pass as the flames settle into a flicker and the coals glow cherry red. Like the fire, the excitement is beginning to dwindle, but there's still a lot of evening left.

The Key of Imagination

"Rich—I don't think this fire is going to make it," said his next-door neighbor, Todd.

"Yeah, I think the wood's too dry. Doesn't look like it'll last much longer," Rich answered.

"Well, let's have some fun while it lasts," Todd replied. "I've got an idea that should make for one heckuva fire. Come on, I'll show you."

The two walked across the backyard to a shed behind Todd's house.

In the corner was a 5-gallon can of diesel fuel.

"Hey, Rich, gimme that bucket over there."

Rich picked up a metal bucket sitting next to the wall and handed it to Todd. Todd unscrewed the lid of the fuel can, then tipped it to pour a gallon or so into the bucket. Rich held the bucket steady.

"Diesel doesn't burn as fast as gas—so you've got a second or two to toss this on the fire before it blows. Just don't hang around too long," Todd explained, grinning.

The two of them walked back to Rich's backyard. Rich walked over to the bonfire carrying the bucket of diesel. The guests looked on in curiosity as he announced...

"This is really going to light up the sky, everybody. Watch this!"

With that, Rich grabbed the bucket with both hands and tossed the fuel directly onto the fire. The diesel fuel landed on the glowing coals and vaporized instantly.

A Dimension of Sound...Sight...

WHOOOMP! A fireball erupted in front of Rich and engulfed him. As he flew backwards, he was overwhelmed by the roaring explosion and bright flash that surrounded him. Landing hard on his back in the grass, everything went dark as he slipped into unconsciousness. Nearby, his 4-year-old son looked on in horror, thinking his daddy was going to die. His wife ran into the house, grabbed the phone, and dialed 911. "My husband has been burned badly! Please send someone quickly!" she told the dispatcher.

As bad as things were at the moment, Rich at least had two pieces of good luck. First, his new neighbor from across the street was an emergency medical technician. He did his best to stabilize Rich until the ambulance arrived. Second, Rich was lucky he hadn't been wearing a shirt. The massive burns to his left arm would have been even worse had burnt or melted clothing stuck to them.

...A Dimension of Time

Rich had no idea how long he'd

been out when he awoke. He tried to lift his arm to look at his watch, but it wouldn't move. His left arm felt as if it was gone—it was completely numb. Confused, he turned his head to the left to glance at his watch and was shocked to see his arm completely wrapped in bandages.

A Land of Shadow and Substance...

The concussion he'd suffered left him dazed and confused. Not sure of where he was, he looked around groggily. In the background, he thought he could hear voices, but they sounded far away. Above him he noticed a bright light—but this one didn't toss him backwards like a child's toy. He heard a nurse say, "Are you awake?"

"Yeah, I think so—where am I, and what happened to me?" he asked.

"You're in the intensive care unit. The doctor will talk to you later about what's happened to you," the nurse replied.

...Of Things and Ideas

As his head began to clear, he realized he was lying on a gurney. Intravenous injection tubes led from bottles hanging above him to his right hand. In time, he became aware of someone behind him, then he heard a voice say, "We're moving you to our burn ward. The doctor will talk to you there."

He watched doorways and overhead lights go by as the orderly pushed the gurney down the hospital's long hallways. He thought how sterile and impersonal it all looked—not at all like the easy-going, fun atmosphere of his Fourth of July party. Suddenly, the gurney swung hard to the right, pushing open a door. The orderly rolled the gurney into the room.

"How are you feeling?" asked the doctor.

"I'm not sure—I'm not feeling much of anything. Why am I here?" Rich responded.

"That was a pretty bad explosion you went through."

"How badly am I hurt?"

"You've got second and third degree burns over 80 percent of your

arm. The burns on your wrist and elbow went all the way to the bone. I'm not going to kid you. This is serious. Recovering from burns like yours is a very painful process. I'm going to have to scrub your burns with a brush. Then we're going to have to do some skin grafts. It's going to be at least a month—more likely two—before you're going to be able to do much of anything."

"It's that bad?"

"Yes—but you're lucky. It could have been worse. Your burns could have been much more extensive. You could've been killed tonight."

You've Just Crossed Over Into the Twilight Zone

The realization of what the doctor said sunk in. He turned away for a moment, closed his eyes, and thought about the grief he'd nearly brought to his family. He thought about his own death—he wasn't even 30 yet. He thought about the times he'd told his son not to play with fire. Like a ghost, the fear of what might have been haunted his thoughts as he asked himself, "Why didn't I take my own advice?"

Rich's trip into "The Twilight Zone" could have been easily avoided. He could have thought through his actions and considered the consequences. Instead of following his example, why not try a little Risk Management during your summer outings? Before doing anything that involves fire—whether it's a bonfire, campfire, or barbecue—consider the following six things. First, ask yourself these three questions. "What dangers exist?" "What are the chances I could get hurt, and how badly could I be injured?" "Is there any way I can go about this safely, or is this a really bad idea?"

Once you've done that, consider your options and pick the best one, act on your decision, then afterwards ask yourself, "Did my plan work well, or could I have done anything better?"

Of course, you could be like Rich and throw caution to the wind. The results may be spectacular, but don't be surprised if you find you've just crossed over into "The Twilight Zone." ■

The Day I Became a Landlubber

AE1 (AW) RICHARD LEE AKER
Courtesy *Safetyline*, Jun-Jul-Aug 96

When I was a teenager, my family used to go to the beach almost every weekend to sun, swim, and have fun. It seemed as though those weekends were never long enough. A typical day at the beach would include searching for shells, playing miniature golf, and having a picnic. I spent my days body surfing and diving for sand dollars. But I lost interest in the surf the day I almost drowned.

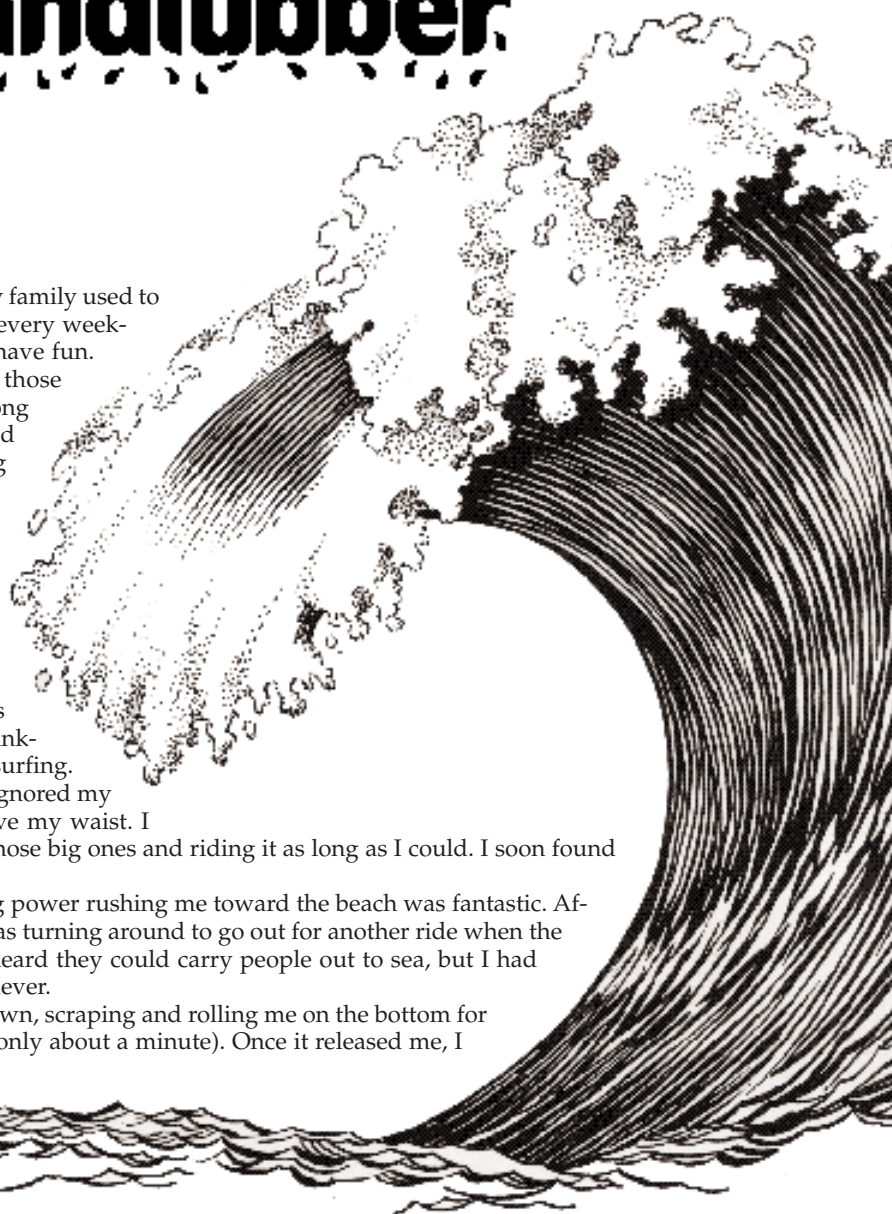
One day we got to the beach and staked out our spot on the sand with our big beach umbrella. As always, I was eager to get into the water. All morning, I had been watching the waves roll in higher than normal and was thinking how great they would be for body surfing.

Soon I got my chance to get wet and ignored my parents' instructions not to go out above my waist. I had to get the thrill of catching one of those big ones and riding it as long as I could. I soon found myself on the crest of a huge wave.

Riding that wave with all its thrusting power rushing me toward the beach was fantastic. After the wave died out, I stood up and was turning around to go out for another ride when the undertow grabbed me. I have always heard they could carry people out to sea, but I had never believed it. Suddenly, I was a believer.

The force of the undertow held me down, scraping and rolling me on the bottom for what seemed like hours (in fact, it was only about a minute). Once it released me, I surfaced, gasping for air.

Looking back toward the beach, I couldn't believe how far I was from shore.



Surviving Undertows, Rip Tides, and Whirlpools

If, like AE1 Aker, the author of “The Day I Became a Landlubber,” you’re unfortunate enough to be swept out to sea, follow his advice. Stay calm. All is not lost. There are ways to make it back to shore safely.

If you are swimming in a heavy sea and find yourself drifting out to sea, turn around and face the wave you know is following you. Take a deep breath, lower your head, and dive through the middle of it. You have little chance of defeating a moving mass of thousands of gallons of seething water 6 feet high. Repeat this process with each wave. Eventually, the waves will carry you diagonally toward shore.

If you have been swept out to sea, try to determine if the tide is coming in or going out. (If you’ve been at the beach all day, you should know this.) If the tide is going out, swim diagonally across the outgoing current toward shore. If the tide is coming in, swim directly toward the shore.

Never relax on a floating, inflated air mattress. These can move out to sea at a rate of 2½ mph—a half-hour nap can put you more than a mile at sea.

If you are in a river, swim toward the nearest shore, whether it is the side you want to be on or not. You can always get help crossing back. Just because it’s not an ocean, don’t underestimate the power of a river. Watch out for eddies or any water flowing in circles; use their outward movement to throw you further in the direction you want to go.

If you are caught in a whirlpool, remember that its greatest circumference is on top, and the least is below the surface in a descending and decreasing orbit. If you find you are going down, take as good a breath as you have time for, and swim several yards under water outwards from the whirlpool. It’s less powerful below the surface than on top. If it’s very powerful, you may have to go down several yards before you can kick free. Keep calm; you can surface when your breath begins to feel short. Swim a powerful breast stroke under water, bringing your arms right back to your thighs to get the best results. Whirlpools often occur during a very high tide, especially around an estuary (*An estuary is an inlet or arm of the sea. It’s also the wide mouth of a river, where the ocean tide meets the river current. —Ed.*)

How long can you survive if you’re swept out to sea? A man named Dr. Alain Bombard wrote a book titled “Naufrage Volontaire,” which described how he simulated a shipwreck and lived on plankton and sea foods for 65 days. But we don’t recommend you trying this. ■

People looked like ants. I didn’t think I was going to be able to make it back. But, by swimming and floating, I finally made it back to the sand where I sat exhausted and scared by what had just happened. As I looked around the beach, nothing was familiar. That’s because the waves had swept me down the beach to a part I had never been to before. While walking along the water to find my family, I thought about what had almost happened to me and thanked God I was alive.

Take it from a former beach bum. If you swim in the surf, expect the unexpected. Don’t underestimate the power of waves, currents, or tides. If an undertow grabs you, don’t panic. It’s possible to survive. ■





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have them practice handling emergency situations."

Once the students have finished the harness training, they're taken into a hangar to practice parachute landing falls (PLFs). Jumping from a table onto a mat on the floor, they learn to land and roll to help prevent injuries when landing. Then the training ends with written tests to make sure the students understand what they've been taught. "If we have any serious doubts about anyone's ability, then they're either drilled until they quell our doubts or they're not allowed to go," Pearson said.

The students jump as soon as possible so they can practice what they've learned while it's fresh in their minds. And although no one is strapped to the student, the student isn't completely alone. An instructor on the ground maintains radio communication with the student throughout the jump, providing advice as needed until the student lands.

Students can also go from static-line jumping to free-fall skydiving, Pearson said. He explained the student will make at least five static-line jumps, including three where the student simulates pulling the ripcord. An instructor in the plane watches the student's free-fall body position and how the student's hands move while reaching for the ripcord. Once the instructor is satisfied, the student will do a "hop-and-pop"—jumping without a static line and pulling the ripcord immediately.

"That tends to be the most traumatic jump you'll ever make," Pearson said. "It's the first time you *have* to pull your ripcord. You no longer have the comfort of knowing the parachute is going to be pulled by the static line no matter what. Your life is literally in your hands."

During the following jumps, the students will begin free-falling—waiting longer each time before pulling the ripcord—until they reach about 20 seconds. At this point, the instructor will jump with the student, watching them to make sure everything is done properly during the skydive.

There is also a third, increasingly popular way to learn to skydive for students who want to experience a long free-fall on their first jump, Greenwood said.

"In accelerated free-fall training, the student exits the airplane with two instructors holding onto the student's harness," he explained. "They go for about a 45-second

free-fall with the instructors helping the student correct any body position errors or handle any problems."

The training for these jumps is, understandably, the most rigorous of all. Not only do the students have to learn how to properly free-fall and handle emergencies, they also have to learn a number of hand signals so they can communicate with the instructors. Typically, the light planes used by the jumpers can climb only to between 10,000 and 13,000 feet above sea level, so the training is done at airfields at lower elevations to allow more free-fall time. That's important, Greenwood explained, because the longer free-fall gives the student more time to correct any problems which might occur.

And problems do occur. Last year an experienced Air Force skydiver was killed when his main parachute malfunctioned and interfered with his reserve. This year an Air Force member was injured when he misjudged his landing. Since 1992, skydiving injuries have cost the Air Force 35 lost workdays. Still, during the last 10 years, skydiving fatalities have dropped, averaging 30.7 annually compared to 38.5 for the decade from 1978 through 1987. Much of the credit, according to Greenwood, goes to the improved safety equipment available to skydivers today.

"The square, ram-air parachute has reduced typical landing injuries such as broken feet, broken legs, and sprained and twisted ankles, by making our landings a lot softer," he said. "Also, most reserve parachutes are now square, ram-air canopies, so your performance is just as good as under your main chute."

He added, "Perhaps the most important safety device that has come along recently is a good, reliable automatic activation device for the reserve parachute. It's about the size of a cigarette pack, and it's stowed inside your reserve parachute. It constantly senses your altitude and rate of descent. If it sees two parameters—an altitude below 750 feet and rate of descent exceeding 78 mph—it will automatically deploy your reserve parachute."

Still, a skydiver can't rely solely on safety equipment. Greenwood explained that pre-boarding equipment checks, performed both by the skydiver and another experienced jumper, are vital to preventing malfunctions. He added that it's important to keep current on new equipment and emergency procedures. "Equipment, training, and having an emergency plan in place are the biggest things I've been trying to push," he said.

When it comes to getting good training, selecting a good skydiving school is paramount, according to veteran skydiver Dave Harper. He suggested using only those schools which are group members of the U.S. Parachute Association (USPA). Students should ask to see the instructor's USPA license and should ensure the school provides an automatic activation device for the student's reserve parachute. Students should also look over the jump plane for obvious signs of neglect such as bald tires, missing fasteners, cracked cowlings, and major oil leaks. Finally, students should ask experienced skydivers for their impression of the school. If that doesn't leave the student with a good feeling, then he or she should check out a different school. ■



Surf's Up! and I'm Down

LT K. B. PAULSON

Courtesy *Safetyline*, Jun-Jul-Aug 96

A storm in beautiful Southern California? Yes—and to my and the other 1,000+ San Diego surfers' delight, this storm brought with it some big surf. No, make that *huge* surf. I was pumped. The months of 3-foot waves were over, and I was going to surf some of the biggest waves I had ever been on. It didn't matter that the radios and TV stations were advising everybody to stay out of the water because of the rough seas. I had been a swimmer in college and have lived by the ocean all my life. I could handle Mother Nature.

My buddy and I arrived at the beach and were stoked to find that no one else was in the water. There were several people watching the awesome spectacle of the ocean, but no surfers. We had the waves to ourselves.

As we put on our wet suits, we were joined by another surfer. We entered the cold water. After a half hour of fighting the tide and rough surf, I finally made it past the breakers. The other surfer was about 50 yards away, but I couldn't see my partner. I caught a couple of smaller waves and was still looking for my partner when I saw him sitting on the beach unable to paddle out.

Then I looked "outside" (toward the ocean) for the next set of waves and saw what looked like a tsunami coming

at me. I was in no-man's land.

I couldn't paddle to get outside of it and couldn't make a run for the beach. As I saw the wave break a couple of feet in front of me, a 15-foot wall of violent, white water was about to enfold me.

I jumped off my board and tried diving to escape the thrashing sea. Since I was an experienced swimmer, I could hold my breath for a long time, but I started running out of air when I was still submerged and bouncing in the water like a child's rubber toy. Finally, the wave finished playing with me and let me surface for a gasp of oxygen. To my horror, I saw another huge wave looming over me. As I was being dribbled off the bottom and was almost out of air again, I thought, "This is how people die surfing." Finally, I surfaced—out of air, exhausted, and with my first rational thought: I would join my partner on the beach.

I learned some lessons that day. The first one was not to mess with Mother Nature. I believe she just spanked me a little to give me a wake-up call. I also learned to always keep my partner with me. When I saw him on the beach, my first thought was that the wimp couldn't make it. Instead, I should have thought about being in the water without a partner and paddled in. The final lesson was to pay attention to news warnings. No wonder we were the only surfers in the water that day. The others had the sense to stay on dry land. ■

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